Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CRISTINA FLEGO
AND
VINCENZO CALEMMA

Appeal No. 2001-2491
Application No. 09/168,564

HEARD: August 14, 2002

Before PAK, TIMM, and MOORE, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1-7. Claims 8-14, the only other claims pending, stand withdrawn as being directed to a non-elected invention.

BACKGROUND

Appellants' invention relates to a process for the hydroisomerization of long-chain n-paraffins (specification at 1, ll. 3-4). Claim 1 is illustrative:

1. A process for the hydroisomerization of long-chain n-paraffins which comprises isomerizing n–paraffins having a number of carbon atoms higher than 15 in the presence of hydrogen and a hydroisomerization catalyst which comprises:

a) a carrier of acid nature consisting of a silica and alumina gel amorphous to X-rays, with a molar ratio $SiO_2/A1_2O_3$ ranging from 30/1 to 500/1, and having a surface area ranging from 500 to 1,000 m^2/g, a porosity ranging from 0.3 to 0.6 ml/g and a pore diameter within the range of 10-40 Angstrom;

b) a mixture of metals, wherein said mixture contains at least one metal belonging to group VIB in an amount of from 5 to 35 % by weight, and at least one metal belonging to group VIII in an amount of from 0.1 to 5% by weight, deposited on the carrier, each amount based on the total of said carrier of acid nature and said mixture of metals.

The prior art references of record relied upon by the Examiner in rejecting the appealed claims are:

Wittenbrink et al. (Wittenbrink)	5,866,748	Feb. 2, 1999 (Filed Apr. 23, 1996)
Perego et al. (Perego)	5,968,344	Oct. 19, 1999 (eff. filing date of Jul. 30, 1993)
Achia et al. (Achia) European Patent Application	0 321 307	June 21, 1989

Claims 1-3, 6, and 7 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 of Perego in view of Achia or Wittenbrink. Claims 1-7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over

Perego in view of Wittenbrink. We affirm substantially for the reasons presented by the Examiner and add the following mainly for emphasis.

OPINION

Appellants state that the claims stand or fall separately for each of the rejections (Brief at 3). To the extent that the claims are argued separately in accordance with 37 CFR § 1.192(c)(8)(2000), we consider them separately.

Obviousness-type Double Patenting

We start our discussion with claim 1, the only independent claim. Claim 1 is directed to a process for hydroisomerizing long chain n-paraffins using a catalyst comprising a mixture of metals deposited on a carrier. All of the references applied by the Examiner are also directed to hydroisomerization of n-paraffins using catalysts containing a metal or a mixture of metals on a carrier (Perego at claims 1-3; Wittenbrink at col. 1, l. 64 to col. 2, l. 1 and col. 2, ll. 62-63; Achia at 3, ll. 54-56). The carrier described in claim 1 of Perego meets all the requirements of the carrier recited in appealed claim 1. Furthermore, each of the references describes the same group of metals, i.e. what we will call the Group VIII metals,[1] for use on the catalyst carrier to catalyze

[1]While Perego refers to the metals as Group VIIIA metals, it is evident from the exemplified listing of metals in each reference that the same family of metals is being described. Note that this group of metals is referred to as Group VIIIA metals under the old IUPAC system but as Group VIII metals under the CAS system. See the attached Periodic Table of the Elements *available at* http://klbproductions.com/yogi/periodic/ and the key provided on page 2 therewith. We will use the CAS system to identify the Groups.

the reaction (Perego at claim 1; Wittenbrink at col. 2, ll. 62-63 and col. 3, ll. 38-60; Achia at 3, ll. 54-56).

While claim 1 requires that the mixture of metals in the catalyst contain a Group VIB metal along with a Group VIII metal, the claims of Perego specify only the use of a Group VIII metal. However, both Wittenbrink and Achia describe using either a Group VIII metal or a Group VIB metal or a mixture thereof on a silica-alumina carrier to catalyze the hydroisomerization reaction (Wittenbrink at col. 3, ll. 44-46; Achia at 3, ll. 54-55). Thus, we conclude that it would have been *prima facie* obvious to one of ordinary skill in the art to have used a mixture of Group VIB and VIII metals in the catalyst of claims 1-3 of Perego as the secondary references indicate that Group VIB metals can be used together with Group VIII metals on a silica-alumina carrier to catalyze the hydroisomerization reaction.

Appellants argue that neither Achia nor Wittenbrink discloses or suggests any benefit from including a Group VIB metal in addition to a Group VIII metal (Brief at 4). This argument is not persuasive because both Achia and Wittenbrink include an express suggestion of using Group VIB and Group VIII metals together in catalysts for the hydroisomerization of n-paraffins. From this disclosure, one of ordinary skill in the art would have had a reasonable expectation that the two types of metals together would be successful in catalyzing the reaction.

Appellants argue that there is no justification to combine Wittenbrink or Achia with Perego because the secondary references do not explicitly set forth a carrier having the characteristics claimed (Brief at 7-8). However, the fact that the secondary references do not

discuss the claimed characteristics does not in itself defeat a conclusion of obviousness. "The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art." *In re Dow Chem.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988). Here, the secondary references suggest that Group VIII and Group VIB metals can be used alone or together on various carriers including silica-alumina carriers having an acidic component active in producing olefin cracking and hydroisomerization reactions (Wittenbrink at col. 3, ll. 60-68). This description of the carrier encompasses the carrier claimed by Perego.

Appellants say that the Group VIB metals would be expected to be inactive on the carrier described in Perego because of the higher alumina content and lower surface area of the Wittenbrink catalyst (Brief at 7). This assertion, however, is not supported by any objective evidence and is, therefore, entitled to little or no probative weight. *In re De Blauwe*, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1994). The high alumina low surface area support Appellants are referring to is merely Wittenbrink's preferred catalyst carrier. As discussed above, Wittenbrink more generally discloses Group VIB metals on a catalyst support which is inclusive of the carrier claimed in Perego (Wittenbrink at col. 3, ll. 60-68). One of ordinary skill in the art would have expected that Group VIB metals would be active on the carrier of Perego.

Appellants argue that, at best, the carrier and metal combination is "obvious to try" (Brief at 8). We do not agree that the combination is merely "obvious to try". "For obviousness under

§ 103, all that is required is a reasonable expectation of success." *In re O'Farrell*, 853 F.2d 894, 904, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988). Looking at the evidence as a whole there is a reasonable expectation that a useful hydroisomerization catalyst would result when a Group VIB metal is used together with a Group VIII metal on the carrier described in claims 1-3 of Perego. That is all that is required to make out a *prima facie* case of obviousness under 35 U.S.C. § 103(a).

We conclude that the Examiner has established a *prima facie* case of obviousness with respect to the subject matter of claim 1.

With respect to claims 2, 6 and 7, Appellants argue that the combination of references neither disclose nor suggest the further limitations of these claims (Brief at 9-10). We disagree. Claims 1-3 of Perego describe a catalyst carrier having characteristics either exactly the same, encompassing or closely overlapping the ranges set forth in claims 2, 6 and 7. Where the difference between the claimed invention and the prior art is some range or other variable within the claims, the applicants must show that the particular range is *critical*, generally by showing that the claimed range achieves unexpected results relative to the prior art range. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). No such showing commensurate in scope with the claims is advanced.

With respect to Appellants' argument that the prior art combination does not disclose or suggest the mixture of metals of claim 3, i.e. molybdenum or tungsten in combination with nickel or cobalt, we find that there is such a suggestion. Perego generally discloses in claim 1 the use of

Group VIII metals. Nickel and cobalt are Group VIII metals. Wittenbrink specifically exemplifies mixtures of nickel and/or cobalt with molybdenum (Wittenbrink at col. 3, ll. 49-54). The references together fairly would have suggested to one of ordinary skill in the art the use of these Group VIII and Group VI metals together.

To the extent that Appellants are arguing that the comparative data in the specification show unexpected results and thus rebut the Examiner's *prima facie* case of obviousness, we agree with the Examiner's determination that the results are not commensurate in scope with the claims (Answer at 5-6). *See In re Kulling*, 897 F.2d 1147 1149, 14 USPQ2d 1056, 1058 (Fed Cir. 1990). Appellants test only nickel in combination with molybdenum under a particular set of conditions. However, claim 1 encompasses using mixtures of any of the known Group VIB metals, i.e. chromium, molybdenum or tungsten, with any of the known Group VIII metals, i.e. iron, cobalt, nickel, ruthenium, rhobium, palladium, osmium, iridium, platinum, hassium and meitherium. Appellants' argument that a showing of unexpected results for any composition within the terms of the present claim compared to the prior art is sufficient to establish patentability herein (Brief at 9; Reply Brief at 2-3) ignores the policy requirement that the protection accorded should be limited to the specific embodiments of the invention shown to produce the results in question. *In re Hotchkin*, 223 F.2d 490, 493, 106 USPQ 267, 270 (CCPA 1955). Appellants have not demonstrated that all the catalyst compositions and reaction conditions covered by the claims are unobvious over the applied prior art.

Appellants say that one of ordinary skill in the art would ascertain a trend in the comparative data to extend its probative value to the limits of the present claims (Reply Brief at 3). Appellants, however, present no adequate basis for reasonably concluding that the various combinations of metals and reaction conditions encompassed by the claims would behave in the same manner as the tested nickel and molybdenum at the reaction conditions of the tests. It is not seem how the testing of nickel-molybdenum evinces a trend with respect to the other thirty-two untested metal combinations and the may other possible reaction conditions.

We conclude that the totality of the evidence supports the Examiner's conclusion of obviousness with respect to the subject matter of the claims.

Obviousness

Appellants basically reiterate the arguments made to address the obviousness-type double patenting rejection (Brief at 10). These arguments fail for the reasons stated above.

In addition, Appellants argue with regard to claim 3 that Perego's Group VIII metal is, in essence, either the noble metals of palladium or platinum while claim 3 is limited to non-noble metals (Brief at 11). This argument is not persuasive because Perego merely discloses palladium and platinum as preferred (Perego at col. 2, l. 66 to col. 3, l. 4). A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including non-preferred embodiments. *Merck & Co v. Biocraft Laboratories*, 874 F.2d 804, 807, 10 USPQ2d 1843, 1847 (Fed. Cir. 1989), *cert. denied*, 493 U.S. 975 (1989). Perego generally suggests using Group VIII metals. Wittenbrink also indicates that Group VIII metals, such as

nickel and cobalt, as well as palladium and platinum, are useful for hydroisomerizing n–paraffins.

Appellants also argue that the reference combination does not disclose the additional limitations of claims 4 and 5 (Brief at 11). Appellants are directed to Perego at column 4, lines 16-42 for the required disclosure.

We conclude that the record as a whole supports the legal conclusion that the invention would have been obvious.

CONCLUSION

To summarize, the decision of the Examiner to reject claims 1-3, 6, and 7 under the judicially created doctrine of obviousness-type double patenting and claims 1-7 under 35 U.S.C. § 103(a) is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

CHUNG K. PAK Administrative Patent Judge	)
CATHERINE TIMM Administrative Patent Judge	) BOARD OF PATENT) APPEALS) AND) INTERFERENCES
JAMES T. MOORE Administrative Patent Judge	)

CT/jg

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